

CLAIMS

What is claimed is:

- 1 1. A subscriber loop interface circuit apparatus comprising:  
2       a signal processor having sense inputs for a sensed tip signal and a  
3       sensed ring signal of a subscriber loop, wherein the signal processor generates  
4       a linefeed driver control signal in response to the sensed signals, wherein the  
5       signal processor resides on an integrated circuit die.
- 1 2. The apparatus of claim 1 wherein the sensed tip signal includes first  
2       and second sensed tip voltages, wherein a difference between the first and  
3       second sensed tip voltages is proportional to a tip current, wherein the sensed  
4       ring signal includes first and second sensed ring voltages, wherein a  
5       difference between the first and second sensed ring voltages is proportional to  
6       a ring current.
- 1 3. The apparatus of claim 1 wherein the signal processor is a  
2       complementary metal oxide semiconductor (CMOS) integrated circuit.
- 1 4. The apparatus of claim 1 wherein the signal processor calculates  
2       common mode and differential mode components of the subscriber loop.
- 1 5. An apparatus comprising:  
2       a signal processor generating subscriber loop control signals in response  
3       to a sensed tip signal and a sensed ring signal of a subscriber loop; and

4           a linefeed driver portion for driving the subscriber loop in accordance  
5       with the subscriber loop control signals, the linefeed driver portion providing  
6       the sensed tip and ring signals, wherein each of the linefeed driver portion  
7       and the signal processor resides on an integrated circuit die.

1       6.      The apparatus of claim 5 wherein the signal processor and the linefeed  
2       driver portion reside on a same integrated circuit die.

1       7.      The apparatus of claim 5 wherein the signal processor and the linefeed  
2       driver portion reside on separate integrated circuit die in separate integrated  
3       circuit packages.

1       8.      The apparatus of claim 5 wherein the signal processor and the linefeed  
2       driver portion reside on separate integrated circuit die within a same  
3       integrated circuit package.

1       9.      The apparatus of claim 5 wherein the integrated circuit die is a  
2       complementary metal oxide semiconductor (CMOS) integrated circuit.

1       10.     The apparatus of claim 5 wherein the signal processor computes  
2       common mode and differential mode components of the subscriber loop.

1 11. The apparatus of claim 5 wherein the linefeed driver portion  
2 comprises:

3 power circuitry providing battery feed to a ring node and a tip node of  
4 the subscriber loop in accordance with the subscriber loop control signals; and

5 sense circuitry providing the sensed tip and ring signals, wherein the  
6 sensed tip and ring signals correspond to a tip current and a ring current of  
7 the subscriber loop.

1 12. The apparatus of claim 11 wherein the sense circuitry comprises:

2 a tip resistor series-coupled to the tip node and the power circuitry;

3 a pair of tip sampling resistors one end of each tip sampling resistor  
4 connected to opposite ends of the tip resistor, the other end of each tip  
5 sampling resistor forming a tip sense node;

6 a ring resistor series-coupled to the ring node and the power circuitry;

7 a pair of ring sampling resistors one end of each ring sampling resistor  
8 connected to opposite ends of the ring resistor, the other end of each ring  
9 sampling resistor forming a ring sense node.

1 13. The apparatus of claim 11 wherein the sensed tip signal comprises first  
2 and second sensed tip voltages, wherein a difference between the first and  
3 second sensed tip voltages is proportional to the tip current, wherein the  
4 sensed ring signal includes first and second sensed ring voltages, wherein a  
5 difference between the first and second sensed ring voltages is proportional to  
6 the ring current.

1

1    14. The apparatus of claim 11 wherein the power circuitry comprises:  
2        a tip control circuit, wherein the tip control circuit increases a tip node  
3        voltage in response to a first tip control signal, wherein the tip control circuit  
4        decreases a tip node voltage in response to a second tip control signal; and  
5                a ring control circuit wherein the ring control circuit increases a ring  
6        node voltage in response to a first ring control signal, wherein the ring  
7        control circuit decreases a ring node voltage in response to a second ring  
8        control signal.

1    15. A subscriber loop interface circuit apparatus comprising:  
2        a signal processor having sense inputs for a sensed tip signal and a  
3        sensed ring signal of a subscriber loop, wherein the signal processor computes  
4        common mode and differential mode components of the subscriber loop.

1    16. The apparatus of claim 15 further comprising:  
2        a linefeed driver portion for driving the subscriber loop in accordance  
3        with subscriber loop control signals provided by the signal processor, the  
4        linefeed driver portion providing the sensed tip and ring signals.

1    17. The apparatus of claim 15 wherein each of the signal processor and the  
2        linefeed driver portion resides on an integrated circuit die.

1 18. The apparatus of claim 16 wherein the signal processor and the  
2 linefeed driver portion reside on separate integrated circuit die within a same  
3 integrated circuit package.

B  
1 19. The apparatus of claim 16 wherein the signal processor and the  
2 linefeed driver portion reside on a same integrated circuit die.

1 20. The apparatus of claim 16 wherein each of the signal processor and the  
2 linefeed driver portion resides on separate integrated circuit die in separate  
3 integrated circuit packages.

add  
a